Localized Charged-Neutral Fluctuations in 158·A GeV Pb+Pb Collisions

B. Mohanty for the WA98 Collaboration

(For the WA98 Collaboration)

Presented by: B. Mohanty

Abstract

The relative fluctuations in neutral to charged pions have been predicted as a signature of the formation of disoriented chiral condensates (DCC), which is one of the most interesting consequences of chiral symmetry restoration. The charged versus neutral correlations have been analyzed from the measured charged particle and photon multiplicities in central 158·A GeV/c Pb+Pb collisions. The analysis has been preformed by using common phase space regions of varying azimuthal size. Fluctuations in the neutral fraction have also been analyzed by the method of discrete wavelet transformations (DWT). The observed rms deviations of the charged-neutral and wavelet distributions are compared to those from different sets of mixed events. The results indicate the presence of non-statistical fluctuations in both charged particles and photons in limited regions of azimuth. Upper limits on the presence of correlated charged-neutral fluctuations are set at 90% confidence level.

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